

What is claimed is:

1. A back light unit in a liquid crystal display including a lamp generating a light, and a light input having a lamp housing for housing the lamp and reflecting the light, said unit comprising:  
 a light-guide plate including a cone pattern to uniformly guide the light from the light input;  
 a light-path converter to control a progress direction of the light in such a manner that the light outputted from the light-guide plate is progressed in a direction perpendicular to a liquid crystal panel; and  
 a diffusion sheet for diffusing the light passing through the light-path converter into the liquid crystal panel.

2. The back light unit according to claim 1, wherein the cone pattern is formed on at least one of an upper surface and a lower surface of the light-guide plate.

3. The back light unit according to claim 2, wherein a vertical angle of a cone of the cone pattern ranges from about 30° to about 120°.

4. The back light unit according to claim 2, wherein a diameter of a cone of the cone pattern ranges from about 100 to about 500  $\mu\text{m}$  and a height ranges from about 50 to about 900  $\mu\text{m}$ .

1           5.     The back light unit according to claim 1, wherein spacings of  
2     cones of the code pattern is controlled to correspond to a distribution of  
3     the light.

1           6.     The back light unit according to claim 1, wherein the light  
2     converter is a forward prism sheet having a vertical angle ranging from  
3     about 90° to about 130°.

1           7.     The back light unit according to claim 1, wherein the light  
2     converter is a backward prism sheet having a desired between angle.

1           8.     The back light unit according to claims 7, wherein a vertical  
2     angle of the backward prism is above about 100°.

1           9.     The back light unit according to claim 1, wherein the light-  
2     path converter is a hologram sheet.

1           10.    The back light unit according to claim 9, wherein a space  
2     and a shape of the hologram pattern are controlled to correspond to an  
3     output angle of the light progressing into the liquid crystal panel.

1           11.    A back light unit for a liquid crystal display, comprising:  
2     a lamp in a lamp housing;  
3     a light-guide plate aside said lamp and said lamp housing, said  
4     light-guide plate including cones distributed in a pattern;

5 a reflective plate placed below said light-guide plate; and  
 6 a diffusion sheet disposed above said light-path converter.

1 12. The back light unit of claim 11, further comprising:  
 2 a light-path converter placed above said light-guide plate.

1 13. The back light unit of claim 12, wherein said light-path  
 2 converter is one of a forward prism sheet, a backward prism sheet, and a  
 3 hologram sheet.

1 14. The back light unit of claim 13, wherein said forward prism  
 2 sheet has a prism with vertical angle ranging from about 90° to about  
 3 130°.

1 15. The back light unit of claim 13, wherein said backward prism  
 2 sheet has a prism with a between angle of within 45°.

4 16. The back light unit of claim 13, wherein said backward prism  
 5 sheet has a prism with a vertical angle of above about 100°.

1 17. The back light unit of claim 13, wherein said hologram sheet  
 2 has a pattern and a shape that are controlled to correspond to an output  
 3 angle of light exiting from said light-guide.

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1 18. The back light unit of claim 11, wherein said cones are on  
2 one of upper and lower surfaces of said light-guide.

1 19. The back light unit of claim 11, wherein a density of said  
2 cones are such that said light exiting from said light-guide is uniformly  
3 distributed.

1 20. The back light unit of claim 19, wherein said density of cones  
2 increases as a distance from said lamp increases.

1 21. The back light unit of claim 19, wherein said cones are more  
2 densely populated around partially dark areas of said light-guide.

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